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tion the outer and lower walls of the nostrils; the Levator menti lifts the soft parts of the chin; the upper portion of the Orbicularis palpebrarum raises the skin about the eyes, and the Pyramidalis that over the root of the nose; the Dilatores nasi lift and expand the lower portions of the nose; the Rectus oculi superior rotates upward the ball of the eye; and the Corrugator supercillii raises the inner ends of the eyebrows until the latter are straight. Thus all these, physiologically speaking, tend when they contract to straighten the curve which, morphologically, extends from the upper portion of the vertebral column upwards, forwards, and then somewhat downwards to the chin, and hence by this fact they tend to complete what is biologically the extension of the body.

It is thus seen that those muscles of the face which take part in or actually produce the facial portion of the 'expression' of joyful emotion, those in other words which by their movement constitute the smile and laugh, are extensor in the same sense as are those of the hand, neck, forearm, leg, and trunk, whose contraction has been previously demonstrated (see research referred to above) to be correlate with the pleasantness of the individual's experience at the time, although it is evident that the general form of the face and its complex functions make this myologic division of function less obvious than in case of the muscles of the rest of the body. The smile is then nothing exceptional, and is no more mysterious than is this general duality of action which obtains in every portion, apparently, of the muscular and neural mechanism.

Study of unpleasant affective states negatively corroborates, as we have already suggested, this explanation of the nature of the smile and facial laugh by exhibiting quite the opposite muscular reactions, as the term 'long face' so well implies in common speech. In disagreeable periods of experi-

ence the head, furthermore, is apt to be bowed, the eyes downcast, the eyelids lowered, and the corners of the mouth and the skin of the forehead drawn down. This opposition was the basis doubtless of the 'principle of antithesis' announced by Darwin the second of his principles of expression, and which has met with so great resistance from many modern physiognomists; it now appears in a new and a much stronger light as indeed a deep-lying tendency in living organisms.

GEORGE V. N. DEARBORN.

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*REPORT ON THE WORK OF THE MORRILL
GEOLOGICAL EXPEDITIONS OF THE
UNIVERSITY OF NEBRASKA.**

THROUGH the generosity of the Hon. Charles H. Morrill, of Lincoln, the expeditions sent out from the University of Nebraska, known as the Morrill Geological Expeditions, have become a permanent organization of the University. Therefore, it is but a fitting mark of respect that reports of these expeditions be given to the Nebraska Academy of Science from time to time in order that they may become matters of record. Introductory to this work, a private geological excursion was undertaken in June of 1891, by Mr. Erwin Hinckley Barbour in the interest of the University of Nebraska. At this time the Dæmonelix beds of our State were discovered and explored, and the Bad Lands of Nebraska and regions in South Dakota were visited, the result being that a very considerable collection was made and several new genera and species found. In May of 1892 a second trip (likewise at private expense) was made to the Sioux county Bad Lands and to the Dæmonelix beds. Again a large amount of material was secured and added to the collections of the State Museum. At this

*Paper read before the Nebraska Academy of Science.

juncture the Hon. Charles H. Morrill, of Lincoln, came forward with liberal contributions for the prosecution and continuance of the work. Then followed during June, July and August of the same year the first of what has become the annual Morrill Geological Expeditions.

A well equipped party of six (exclusive of guide) namely: T. H. Marsland, F. C. Kenyon, A. C. Morrill, H. H. Everett, J. H. Haines and Erwin H. Barbour in charge, visited the Bad Lands of the State, and especially the Dæmonelix beds, continuing thence into South Dakota and to the Dinosaur beds of Wyoming.

In 1893 a similar sum given by Mr. Morrill made possible the second annual Morrill Geological Expedition which visited and collected in the Rhinoceros beds of Kansas, the Hat Creek Bad Lands and the fossil Corkscrew beds in the Loup Fork Tertiary of Sioux county. The party consisted of T. H. Marsland, H. H. Everett, with Erwin H. Barbour in charge. Later the director of the expedition extended the work of collecting to the Middle and New England States.

The third annual Morrill Geological Expedition, 1894, consisting of U. G. Cornell, H. H. Everett, A. C. Morrill, E. L. Morrill, J. P. Rowe, Samuel McCormick, guide, Erwin H. Barbour, as director, drove from Hot Springs to the Big Bad Lands of South Dakota where some six or eight weeks were spent, thence to the Black Hills and beyond into Wyoming and Montana. The result of the expedition being that an unusually large amount of material of great variety including fossils, minerals, rocks, etc., was secured.

In 1895 the fourth annual Morrill Geological Expedition consisting of U. G. Cornell, H. H. Everett, F. G. Hall, G. H. Hall, E. F. King, J. P. Rowe, G. R. Wieland, T. H. Marsland, Francis Roush, guide, Erwin H. Barbour in charge, con-

tinued work from the Dæmonelix beds and the Little Bad Lands of Nebraska to the Big Bad Lands of South Dakota thence to the Black Hills and beyond. This was the largest and best equipped party sent out as yet.

In 1896 the fifth annual Morrill Geological Expedition extended its work to eastern fields, spending some time in the Carboniferous of Nebraska, a week in the Devonian of New York, and a couple of weeks in the Silurian of Ohio and Indiana.

In the summer of 1897 the sixth annual Morrill Geological Expedition consisting of B. G. Almy, U. G. Cornell, O. A. Reitz, Francis Roush, guide, Carrie A. Barbour, E. H. Barbour in charge, again visited and collected in the Big Bad Lands of South Dakota, the Black Hills region, the Little Bad Lands, the Dæmonelix bed of Nebraska and beyond into Wyoming.

In 1898, the seventh expedition was influenced by the Trans-Mississippi Exposition in Omaha, and the museum force and assistants in the geological department became interested in the preparation of exhibits illustrating our natural resources. The quarries of the State, more particularly those of southeastern Nebraska, were visited and important economic sets of building stones, clays, soils, etc., were added to the Morrill collections.

The eighth expedition, 1899, was divided into five distinct parties, two of which were provided with teams and camp accoutrements, the other parties going by rail from place to place. A party of two followed the Dakota cretaceous from Oklahoma to South Dakota. Another drove through the quarry regions in southeastern Nebraska. A third party, a graduate student in the department of geology, spent the summer collecting Bryozoa in the Carboniferous.

The writer with assistants, spent some weeks collecting invertebrate fossils in the carboniferous exposures, while the director,

with an assistant, visited fields in Wyoming, Montana, Dakota, and Nebraska. Over two hundred boxes of excellent material were added to the collections of the State Museum.

A geological expedition for 1900 is already assured by a recent gift, to that end, made by Mr. Morrill to the Board of Regents of the University of Nebraska.

In each instance the Burlington & Missouri River Railroad furnished free transportation for the party and 'outfit' as well as for all material collected. So with free transportation, and the gratuitous service of students of the University of Nebraska and with all expenses defrayed by the Hon. Charles H. Morrill, a maximum amount of material at a minimum cost was massed together. Sets of duplicate specimens have since been donated to 40 accredited high schools, academies, and colleges in the State, and exchanges have been made with the following universities: Ohio, Utah, Kansas, Minnesota, Columbia, Case School of Applied Science and to the Field Columbian Museum, and the National Museum. These collections seem to have unusual exchange value, the demand for them even exceeding the supply. The usefulness then of Mr. Morrill's work has extended beyond the limits of the State, and while contributing to the cabinets of others, his own collections have been so enriched as to fill most of the cases on the main floor of the State Museum and some of the cases on the second floor.

CARRIE ADELINE BARBOUR.

THE UNIVERSITY OF NEBRASKA.

SCIENTIFIC BOOKS.

The Cyclopaedia of American Horticulture. By L. H. BAILEY and WILHELM MILLER. Comprising suggestions for cultivation of horticultural plants, descriptions of the species of fruits, vegetables, flowers and ornamental plants sold in the United States and Canada,

together with geographical and biographical sketches. In four volumes. Illustrated with over two thousand original engravings. New York, The Macmillan Company. Vol. I., A. to D., pp. xxii + 509, figs. 743.

In these days of the rapid multiplication of books no small responsibility attaches to their reviewers. Indeed the reviewer may assume a greater responsibility than either the author or publisher, for to him prospective purchasers and readers turn in the confident expectation that he will so advise them that they shall waste neither their money nor time. In the world of letters, to be sure, it may be an actual merit in a book that a hot summer's day, a monotonous railroad journey, or a number of restless hours at bedtime can be sunken in its perusal. But outside the pastime series, the information conveyed is expected to be accurate and proportionate in quantity and value to the time consumed in getting at it. And it is precisely for advice on this point that the public turn to the columns given over to the reviewer; for the author, as a rule, modestly refrains from sounding the praises of his ware, and the publisher quite as commonly advertises a book for what it ought to be as for what it really is.

One of the first questions that the reviewer faces nowadays, he most frequently leaves unanswered on paper, however he may answer it in his own mind, namely, why the book has ever seen the light. For himself, since the thoughtful publisher has sent him a copy with the compliments of the house and the card of the author, he does not need to decide whether it is worth the cost of purchase, and so he passes by the line of least resistance to the independent discussion of its merits and demerits.

This question of the need for its publication is more readily answered for the 'Cyclopaedia of American Horticulture,' than for most books, since it is easier to answer it on the merits of a book alone when the book belongs to a class that does not comprise many titles, than when hundreds of books of about the same scope have been brought out. There are few comprehensive books on Horticulture, and none on American Horticulture which cover the ground mapped out for the new Cyclopaedia. A generation or two ago the books of Loudon